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Model AT84R (02-27-2005)
Software Version 1.0 (02-27-2005)

TABLE OF CONTENTS

<i>Overview.....</i>	<i>2</i>
<i>Command Structure</i>	<i>2</i>
<i>COMMAND = *KXX (0FH, XXH, YYH)</i>	<i>2</i>
<i>COMMAND = *GET (0FH) Get I/O Status command.....</i>	<i>3</i>
<i>COMMAND = *VER (0FH) Version command.....</i>	<i>3</i>
<i>COMMAND = *TYP (0FH) Board Type command.....</i>	<i>3</i>
<i>COMMAND = *LOC (0FH) Locate command</i>	<i>3</i>
<i>COMMAND = *TMR (0FH) Read Timers command.....</i>	<i>3</i>
<i>Optional Control Of Inputs I1-I8 As Outputs.</i>	<i>4</i>
<i>Individual control with the command KXX with XX value 11 – 18.....</i>	<i>4</i>
<i>Parallel control over all outputs</i>	<i>4</i>
<i>Optional Event Driven Mode (J5) Removed</i>	<i>5</i>
<i>Notes.....</i>	<i>5</i>

Overview

The AT84R unit is a general-purpose microprocessor controlled digital I/O device accessible from a standard RS-232 port. This unit has 4 relay outputs and 8 active low digital inputs. The digital inputs can optionally be controlled as active low TTL compatible outputs.

Command Structure

All commands begin with the command start character '*' next is a three character op-code followed by the parameter list incased in parentheses. The first parameter will always be the unit address, which for this unit is fixed to "0FH".

COMMAND = *KXX (0FH, XXH, YYH)

The parameter XX is an ASCII hex value specified in upper case only, which specifies the output resource to be controlled. The parameter YY is an ASCII hex value specified in upper case only which specifies the value used to control the output resource specified with XXH.

<u>Allowed values for XX and resource they control</u>	
<u>XX</u>	<u>Resource</u>
01	Relay K1
02	Relay K2
03	Relay K3
04	Relay K4
11 through 18	Inputs I1 – I8 used as outputs
1A	Inputs I1 – I8 as outputs set in parallel

Values for YY control the state of relays K1 through K4 by loading a individual state timer equivalent to the value specified in YY * .5 seconds. Therefore if the following command were issued, relay K1 would be activated for 2.5 seconds.

*KXX (0FH, 01H, 05H)

The maximum programmable on time for a relay is FEH or 254 * .5 seconds = 127 seconds.

If the value for YY is set to "FF" the relay specified by XX will remain activated until a lower value or "00" is sent.

Turn relay K3 on and leave it on with this command: ***KXX (0FH, 03H, FFH)**

Turn relay K3 off with this command: ***KXX (0FH, 03H, 00H)**

COMMAND = *GET (0FH) Get I/O Status command

This command will read the state of the outputs and inputs of the device.

Example response to the command “*GET (0FH)” will be in the format GXX-OOII, where O’s are outputs and I’s are inputs, the first O will always be zero since there are only 4 relay outputs on this unit.

Here is an example response to the *GET (0FH) command “**GXX-01AA**”, here the output relay K1 is activated and the inputs I2,I4,I6, and I8 are being driven low either as outputs or as inputs from an external device, depending on the configuration with the *KXX commands.

COMMAND = *VER (0FH) Version command

This command will read the software version string from the unit currently the version response is as follows: “VER-1.0-250213”

COMMAND = *TYP (0FH) Board Type command

This command will read the hardware board type string from the unit currently the version response is as follows: “TYPE-AT84R-REV-A”

COMMAND = *LOC (0FH) Locate command

This command returns “LUNIT (0FH)”, verifies the unit is responding to commands.

COMMAND = *TMR (0FH) Read Timers command

This command returns the values for the 4 timer/counters for relays K1-K4 in the format TXX-AA-BB-CC-DD, where AA is the ASCII hex value for counter K1, BB is the ASCII hex values for counter K2, CC is the ASCII hex value for counter K3, and DD is the ASCII hex value for counter K4.

Example: *TMR (0FH) could return “TXX-0A-FF-10-00” which would decode as follows:

K1 is active and will deactivate in approximately 5 seconds.

K2 is active and will remain active due to the value being set to FF.

K3 is active and will remain active for approximately 8 seconds.

K4 is not active.

Optional Control Of Inputs I1-I8 As Outputs.

Inputs I1 – I8 can optionally be controlled as outputs (active low) by using the KXX command with values of 11 – 18 or 1A for parameter XX. Care should be used not to drive the inputs from an external source while trying to drive them from the KXX command.

Individual control with the command KXX with XX value 11 – 18

Turn on input I1: *KXX (0FH, 11H, FFH), this command will drive the input I1 to the low state. Sending any value other than 'FF' for parameter YY will return the input to the high floating state.

Input #	XX value
I1	11
I2	12
I3	13
I4	14
I5	15
I6	16
I7	17
I8	18

Turn I2 on (drive low) with command *KXX (0FH, 12H, FFH)

Turn I2 off (float high) with command *KXX (0FH, 12H, 00H)

Parallel control over all outputs

Parallel control over all outputs can be achieved by sending a bit mask in parameter YY to the inputs by specifying XX equal to "1A", see the following command examples.

*KXX (0FH, 1AH, 00H) – This sets all inputs to the floating high state, bit mask 00.

*KXX (0FH, 1AH, AAH) – This sets every other input starting at I1 to the low state.

*KXX (0FH, 1AH, FFH) – This sets every input to the active low state.

Optional Event Driven Mode (J5) Removed

Changes on inputs will be reported automatically with an output response in the format EXX-OOII. Where OO is the state of the outputs K1-K4 indicated as a bit mask in the second nibble or 4 bits represented by the second "O". Where II is the state of the inputs I1-I8 indicated as a bit mask in the 8 bits represented in an ASCII hex encoded value.

Example:

Input I1 shorted to ground while K4 is active will generate the following transmission.
"EXX-0801" here OO=08 and II=01

Input I1 short removed will generate the following transmission.
"EXX-0800" here OO=08 and II=00

Notes

All responses are terminated with a carriage return and linefeed characters.

All commands are active in the event mode.